draft 3-14-95

Impound San Joaquin Valley drainage and time discharges to coincide with flushing flows

Category: (To be developed)

Resources Area: Water Quality, WQ-S-4
Related Options: WQ-S-5, WQ-S-3, WQ-S-12, AR-D-4

Resources Issue: Salt intrusion within the Estuary negatively affects agriculture, industrial, and municipal uses of Delta water and may negatively affect Delta (freshwater dependant) species. In particular, pesticides, selenium, boron, and arsenic from San Joaquin agricultural drainage degrade water quality along the San Joaquin River and within the estuary. Bromide associated with the salt content of the exported water contributes to the creation of unwanted byproducts during the process of treating Delta source waters for industrial and municipal uses. Of particular importance is the formulation of trihalomethanes (suspected carcinogens) as a result of drinking water disinfection. The implementation of more stringent regulations on these byproducts requires advanced treatment processes at significant costs to local water agencies. Salt content reduces agricultural production and increases production costs by requiring fresh water for salt leaching from the soil. Increased salts accelerate corrosion of fixtures and appliances and reduces the ability to economically recycle wastewater. In addition, standards established to address the problems associated with the intrusion of salinity in to the Delta reduces the availability of water for export. There are several related issues that may be partially addressed or impacted to some degree by this option. These issues include the potential for toxics settling out of the impounded drainage, possible improved aquatic resources in the estuary, re-introduction of these salts and other compounds into the Delta waters through agricultural discharges, organic carbon content of agricultural waste discharges from Delta islands which contribute to the creation of unwanted byproducts during the process of treating Delta source waters for industrial and municipal uses, municipal and industrial discharges into the Delta, degradation of rearing and migration habitat for the fishery, and fish entrainment and mortality in the interior Delta as a result of export pumping within the Delta.

Discussion: The construction of a facility to impound San Joaquin Valley drainage to enable discharges to be timed to coincide with flushing flows will lessen the impact of valley drainage on salt concentrations in the Delta. Water quality in the Delta could be improved for Delta agriculture, aquatic resources, and project exports. The discharge of the impounded drainage would most likely occur with large flushing flows on the San Joaquin River and not necessarily with tidal flows/activity. A possible sub-alternative to this action option is the coordination of this action option with a reduction in crop acreage on the west side of the valley to reduce the amount of drainage water to be impounded. This option could be implemented in conjunction with other measures such as comprehensive source control programs for Delta source waters that are often more cost effective and more efficient from a total resource consumption viewpoint.

Objectives addressed: Water Quality General and Specific 2

If the impounded drainage is held for some time before a good flushing flow comes along, the potential for toxic materials settling out increases and/or the potential for groundwater contamination will require close review by experts in water quality. The impounded drainage

could negatively affect any biological resources that come into contact with it and the potential for this occurring would require close review by experts in wildlife and wetlands resources.

Assumptions:

- A socially and environmentally acceptable site for the impound facility could be located.

Key Feasibility Factors:

- Confirm it is possible to construct an impounded drainage basin with features to discourage wildlife from coming into contact with the water in the basin.
- Confirm groundwater would not be negatively affected.

Implementation Effects:

- The Water Quality TAC (WQTAC) estimated high benefits for water uses such as agriculture, municipal, and industrial uses (matrix WQ-S-4) in the WQTAC report. Medium benefits were estimated by the WQTAC for fisheries, recreation, and environmental uses.

Most Likely Benefits:

- The quality of the water in the San Joaquin River and the estuary would be improved through reduced concentrations of salts, pesticides, selenium, boron, and arsenic from agricultural drainage water.

Other Possible Benefits:

- Quality of the export water could be improved through coordination between pumping and San Joaquin River drainage releases.

Most Likely Negative Impacts:

- Toxic materials in the impounded drainage basin may settle out while the water is awaiting discharge.
- Highly toxic water in the basin may endanger and/or cause harm to birds / waterfowl that come into contact with it.
- Toxic materials in the impounded drainage basin may ultimately have negative impacts on groundwater in the vicinity.

Other Possible Negative Impacts:

- While this alternative would lower the concentration of salinity and associated constituents in the Delta, it might not always reduce such concentrations in the San Joaquin River.

- Gravity flow in drain channels may be impaired.

Possible Regulatory and Institutional Constraints:

- CEQA
- NEPA
- Encroachment Permit

Other:

References and Published Materials: Use Combined TAC Reference List.